A New *Lobelia* from Mexico, with Additional New Combinations in World Campanulaceae

Thomas G. Lammers

Department of Botany, Field Museum of Natural History, Chicago, Illinois 60605-2496, U.S.A.
Current address: Department of Biology and Microbiology, University of Wisconsin Oshkosh, Oshkosh, Wisconsin 54901, U.S.A. lammers@uwosh.edu

ABSTRACT. *Lobelia guerrerensis* is a new species endemic to pine, pine-oak, and mixed deciduous forests of the Sierra Madre del Sur in Guerrero, Mexico. Though collected several times over the past 60 years, the specimens were consistently misidentified as the narrow-leaved phase of *L. laxiflora*. Detailed phenetic analyses, however, have showed them to be morphologically quite distinct. In addition, several new combinations needed for a forthcoming checklist of world Campanulaceae are published.

Work is drawing to a close on a checklist of Campanulaceae s.l. currently recognized in the world's taxonomic literature. Four precursor papers effecting requisite nomenclatural changes (Lammers, 1995, 1998a, 1999) and describing recently detected species (Lammers, 1998b) have already appeared. This is the fifth and (I hope) final installment in that series.

It should be noted that some of the names validated here stem from recent studies conducted under my direction by two students, Michael James Eakes of the University of Illinois and Kari Ellen Morris of the University of Illinois-Chicago. It will not be possible to publish their complete results prior to publication of the checklist. Therefore, nomenclatural innovations dictated by their studies are extracted and published here in advance, so that the resulting names will be available for use in the checklist and elsewhere.

Actions undertaken here are of three types: (1) description of a new species of *Lobelia* L. from Guerrero, Mexico (with a change in rank for a related taxon); (2) new combinations in *Campanula* L., *Centropogon* C. Presl, and *Lobelia*, dictated by the principle of priority; and (3) new combinations for species and subspecies of *Codonopsis* Wallich, *Cyanea* Gaudichaud, *Cyclocodon* Griffith, and *Delissea* Gaudichaud, which do not have a name at that rank in the genus or species to which they are assigned.

NEW SPECIES

Unpublished morphometric studies in *Lobelia* sect. *Homochilus* A. DC. by Eakes (cf. Hamlin, 1995; Eakes & Lammers, 1996) disclosed the existence of a discrete group of specimens from the Mexican state of Guerrero, which did not conform to any previously recognized taxon. These specimens had been collected over the past 60 years by different botanists and widely distributed to the world's herbaria. In every instance, however, they were identified as the narrow-leaved phase of *L. laxiflora* Kunth, a species widespread in Mexico and Central America (see below). It was only with detailed phenetic analyses that the distinctness of these plants was revealed. Because these plants were as distinct morphologically as any species in the section, they are here described as a new species:

Lobelia guerrerensis Eakes & Lammers, sp. nov. TYPE: Mexico. Guerrero: municipio de Atoyac de Alvarez, a 6 km al SO de Puerto del Gallo, bosque mesófilo de montaña, 2320 m, 29 Mar. 1983, *Soto & Martínez 5136* (holotype, MEXU). Figure 1.

A *Lobelia laxiflora* foliis cernuis cum marginibus integris vel subintegris et minute revolutis, corollae tubo flavo vel luteo-aurantiaco et lobis rubris vel aurantiacis, tubo antherarum dense villoso a basi ad summum tecto cum trichomatibus isabellinis 2–4 mm longis, antheris ventralibus apice caespitosis cum trichomatibus isabellinis 1.5–2 mm longis, capsulis 9–11 mm diametro, et seminibus 0.7–0.8 mm longis 0.3–0.4 mm latis differt.

Stems 1–2 m tall, woody or suffruticose, branched or unbranched, erect or ascending, glabrous. Leaves sessile, glabrous; lamina linear or lanceolate, 7–18 cm long, 0.3–1.1 cm wide, cernuous, chartaceous; margin entire or sometimes with a few distant minute callose teeth, minutely revolute; apex narrowly acuminate; base cuneate or attenuate. Flowers solitary in the axils of the upper leaves; pedicels 60–130 mm long, ca. 1 mm diam., straight or slightly incurved, glabrous, bibracteolate in the lower half; bracteoles 0.5–3 mm long, linear. Hypanthium depressed hemispheric, 4–

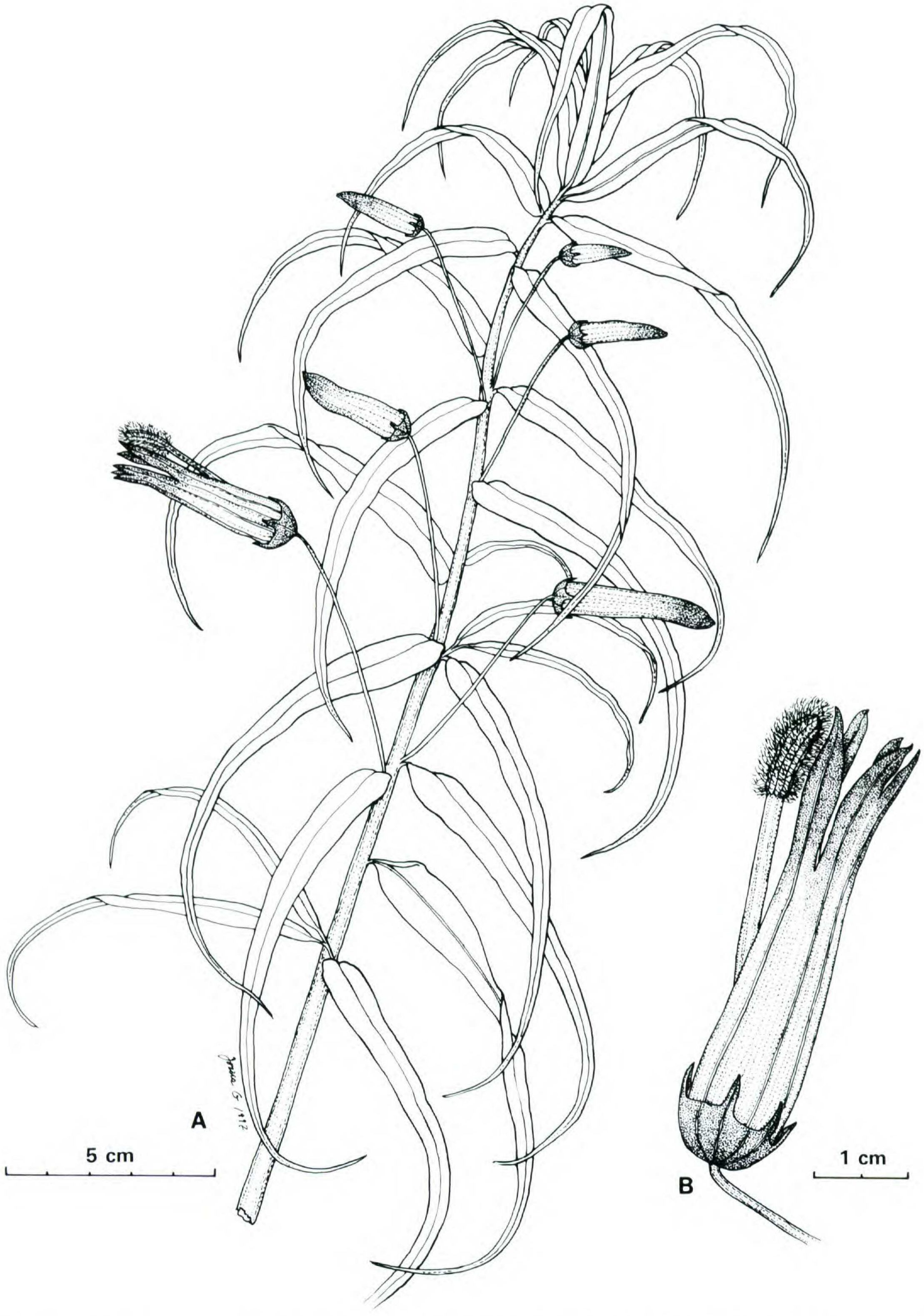

Figure 1. *Lobelia guerrerensis* Eakes & Lammers (from the holotype and *Reveal et al. 4337*, TEX). —A. Upper portion of stem. —B. Flower.

5 mm long, 9–11 mm diam., glabrous; base rounded or truncate. Calyx lobes narrowly triangular or triangular, 2.5–5 mm long, 1–2 mm wide, glabrous; margin entire; apex acuminate. Corolla yellow or yellowish orange on tube, grading to orange or red on the lobes, 35–44 mm long, glabrous; tube 19–25 mm long, 7–10 mm diam. at base, gradually tapering to 6–8 mm at mouth, laterally fenestrate, dorsally cleft nearly to base; dorsal lobes linear, 14–22 mm long, 1.5–3 mm wide, recurved, the apex acute; ventral lobes 12–21 mm long, straight or slightly deflexed, connate for most of their length, forming a trifid lip, these segments triangular, 4–8 mm long, 1.5–2.5 mm wide, acute at apex. Staminal column somewhat exserted; filament tube 29–33 mm long, 1.3–1.7 mm diam., pale yellow, glabrous; anther tube 2.5–4 mm diam., the surface from apex to base densely villous with dirty yellow trichomes 2–4 mm long; dorsal anthers 8.5–9 mm long; ventral anthers 7–7.6 mm long, with tufts of dirty yellow trichomes 1.5–2 mm long at apex. Capsule broadly ovoid, 8–10 mm long, 9–11 mm diam. Seeds honey-colored, ellipsoid or cylindrical, 0.7–0.8 mm long, 0.3–0.4 mm wide, 0.1–0.2 mm thick, the surface faintly striate.

Distribution, habitat, and phenology. Endemic to Guerrero, Mexico, where the plants grow on steep wooded slopes and moist embankments in pine, pine-oak, and mixed deciduous forests of the Sierra Madre del Sur, at elevations of 1890–2750 m. Flowering begins in early October and continues through February.

Etymology. This species takes its name from the state of Guerrero.

Relationships. As noted above, specimens of *L. guerrerensis* were identified previously as the narrow-leaved phase of *L. laxiflora* (see below). The two taxa are similar in habit, general size and shape of their leaves, inflorescence structure, floral structure, and seed morphology. However, the new species differs in its cernuous (vs. flat) leaves with the margin minutely revolute (vs. flat) and entire or subentire (vs. denticulate, serrulate, serrate, or doubly serrate); longer, denser, dirty yellow (vs. white) pubescence on the anther tube; broader capsules; and slightly larger seeds. Perhaps most conspicuously, the pigmentation pattern of the corolla is the reverse of that seen in *L. laxiflora*. In that species, the tube is orange or red and the lobes yellow or yellowish orange, while *L. guerrerensis* has just the opposite: yellow or yellowish orange tube with orange or red lobes.

Paratypes. MEXICO. **Guerrero**: Mazatlán, *Berlín 53* (ENCB); 1–3 km NW of Puerto El Gallo, *Breedlove 36058* (CAS, MICH); 37.9 km NE de El Paraíso, *Cowan 4961* (TEX); 6.5 km W de Puerto del Gallo por camino a Paraíso, *Hernández & Tenorio 858* (MICH); second ridge W of Petlacala, *Mexia 9049* (ARIZ, B, CAS, G, K, MO, NY, W); 3 mi. SW of Puerto del Gallo, *Reveal et al. 4337* (CAS, GH, K, MICH, MO, NY, TEX); Cerro Alquitrán cerca Tuxpan, *Schwabe in 1977* (B).

KEY TO THE SPECIES OF *LOBELIA* SECT. *HOMOCHILUS*

1a. Leaves broadly and conspicuously decurrent on stem, their margins coarsely dentate or lobed; pedicels shorter than the flowers; calyx lobe margins fimbriate-dentate; corollas monochromatic, purple or red-purple (Peru) . . . . . *L. decurrens* Cavanilles

1b. Leaves not decurrent on stem, their margins subentire or minutely toothed; pedicels equaling or longer than the flowers; calyx lobe margins entire or minutely toothed; corollas usually bicolored, yellow, orange, or red.

2a. Lamina broadest at or near middle, 3.5–8 cm wide, on stout petioles 10–30 mm long; stems, flowers, and ventral surface of lamina white-tomentose (Oaxaca) . . . . . *L. ghiesbreghtii* Decaisne

2b. Lamina usually broadest below middle, 0.2–5 cm wide, sessile or on slender petioles up to 7 mm long; stems, flowers, and ventral surface of lamina glabrous or pubescent, but never white-tomentose.

3a. Pedicels 85–210 mm long; calyx lobes 6–18 mm long; dorsal corolla lobes 20–33 mm long, the ventral 18–26 mm long; dorsal anthers 9–12 mm long, the ventral 7.5–9.5 mm long; capsules 10–15 mm long; seeds finely reticulate (Guerrero to Guatemala) . . . . . *L. aguana* F. E. Wimmer

3b. Pedicels 20–130 mm long; calyx lobes 1–6 mm long; dorsal corolla lobes 10–22 mm long, the ventral 10–21 mm long; dorsal anthers 6–9 mm long, the ventral 4.5–7.6 mm long; capsule 6–12 mm long; seeds faintly striate.

4a. Lamina cernuous, the margin entire or nearly so and minutely revolute; corolla yellow or yellowish orange on tube, red or orange on lobes; anther tube with dense dirty yellow trichomes 2–4 mm long from apex to base; ventral anthers with a tuft of dirty yellow trichomes 1.5–2 mm long at apex; capsules 9–11 mm diam.; seeds 0.7–0.8 mm long, 0.3–0.4 mm wide (Guerrero) . . . . . *L. guerrerensis* Eakes & Lammers

4b. Lamina plane, the margin denticulate, serrulate, serrate, or doubly serrate and flat; corolla red or orange on tube, orange or yellow on lobes; anther tube with sparse to moderately dense white trichomes 0.5–1 mm long on dorsal surface toward apex; ventral anthers with a tuft of white trichomes 0.7–1.3 mm long at apex; capsules 7–9 mm diam.; seeds 0.5–0.6 mm long, 0.2–0.3 mm wide (Arizona to Colombia) . . . . . *L. laxiflora* Kunth

Lobelia laxiflora, the species most similar to *L. guerrerensis*, is a geographically widespread and highly polymorphic species in which several varieties and forms have been recognized. The most commonly followed infraspecific classification is that of McVaugh (1943), who divided *L. laxiflora* into four varieties: var. *angustifolia* A. DC., var. *laxiflora*, var. *nelsonii* (Fernald) McVaugh, and var. *stricta* (Planchon & Oersted) McVaugh. However, Eakes's morphometric studies failed to support this classification. Instead, his analyses suggested that *L. laxiflora* could only be divided meaningfully into two sets of populations. The one set corresponded to variety *angustifolia*, while the other comprised specimens referable to the three other varieties. The two groups were largely parapatric and connected by occasional morphological intermediates in the contact zone.

Situations such as this are best expressed nomenclaturally by use of subspecific rank (cf. Lammers, 1988, 1990, 1995). Thus, *L. laxiflora* is here divided into subspecies *angustifolia* and autonymic subspecies *laxiflora*. The requisite change is effected below, followed by a key for their identification. Complete synonymy is given for subspecies *angustifolia*; all other names included under *L. laxiflora* by McVaugh (1943) are synonyms of the autonymic subspecies.

An added benefit of the use of subspecific rank in this case is that workers who find it useful to do so may continue to recognize McVaugh's (1943) three other varieties. Though Eakes's analyses did not support such a classification, subspecies *laxiflora* could be subdivided into variety *laxiflora*, variety *nelsonii*, and variety *stricta* by those who believe that these taxa can be distinguished in their region.

Lobelia laxiflora subsp. **angustifolia** (A. DC.) Eakes & Lammers, stat. nov. Basionym: *Lobelia laxiflora* var. *angustifolia* A. DC., in DC., Prodr. 7: 383. 1839. *Lobelia persicifolia* var. *angustifolia* (A. DC.) Vatke, Linnaea 38: 723. 1874. *Lobelia laxiflora* f. *angustifolia* (A. DC.) Voss, in Siebert & Voss, Vilm. Blumengärtn. (ed. 3) 1: 576. 1894. *Lobelia angustifolia* (A. DC.) Urbina, Cat. Pl. Mexican. 201. 1897; non Chamisso, Linnaea 8: 219. 1833; nec Bentham, in Endlicher, Enum. Pl. 74. 1837. TYPE: Mexico. México: Toluca, Apr. 1834, *Andrieux 267* (lectotype, here designated, K; photograph, F; isolectotypes, K, W). De Candolle based the name on this collection plus three icones, two published descriptions, and living plants seen in cultivation. Of these, the specimen can best be identified with the description. However, the collection is not represented in De Candolle's own herbarium, and a duplicate is designated as the lectotype.

Lobelia dracunculoides Willdenow ex Schultes, in Roemer & Schultes, Syst. Veg. 5: 56. 1819. TYPE: "America meridionalis," leg. Humboldt & Bonpland, *Herb. Willdenow 3989* (holotype, B-W [IDC-microfiche!]).

Rapuntium kunthianum C. Presl, Prodr. Monogr. Lobel. 27. 1836. *Lobelia persicifolia* var. *amygdalina* Vatke, Linnea 38: 723. 1874. Both validated by indirect reference to: *Lobelia persicifolia* Cavanilles sensu Kunth, in HBK, Nov. Gen. Sp. 3: 310 (quarto), 242 (folio). 1819; non Cavanilles, Icon. 6: 12. 1801; nec Lamarck, Encycl. 3: 584. 1792. TYPE: Mexico. México: prope Zumpango, *Humboldt & Bonpland s.n.* (lectotype, here selected, P-Bonpl. [IDC-microfiche!]; isolectotypes, B, B-W [IDC-microfiche!]). Though there is no evidence that Presl saw any of these sheets, Article 7.7 of the *Code* (Greuter et al., 1994) dictates that in cases such as this, the type be designated in the context of the validating description. This is not an avowed substitute for illegitimate *L. persicifolia* Cavanilles; on the same page, Presl recognized that species under the replacement name *Rapuntium cavanillesianum* (Schultes) C. Presl.

Lobelia cavanillesii var. *lutea* F. Haage & K. Schmidt, Gartenflora 52: 577. 1903. *Lobelia laxiflora* f. *lutea* (F. Haage & K. Schmidt) F. E. Wimmer, Pflanzenr. IV.276b: 682. 1953. TYPE: not located. Name based on yellow-flowered plants raised from normally pigmented progenitors at a commercial nursery in Erfurt, Germany.

Lobelia nelsonii var. *fragilis* B. L. Robinson & Fernald, Proc. Amer. Acad. Arts 43: 27. 1907. *Lobelia laxiflora* f. *fragilis* (B. L. Robinson & Fernald) F. E. Wimmer, Pflanzenr. IV.276b: 682. 1953. TYPE: Mexico. Morelos: Parque Station, rocky hills, 7500 ft., 13 Feb. 1907, *Pringle 10360* (holotype, GH; photograph, F; isotypes, B, BM, E, F, G[3], GOET, K, MEXU, MIN, MO, NY, PH, US, W).

Lobelia laxiflora var. *brevipes* F. E. Wimmer, Pflanzenr. IV.276b: 683. 1953. TYPE: Mexico. Baja California: Cape region, Jan.–Mar. 1901, *Purpus 234* (holotype, WU; isotypes, E, K, MO, US).

KEY TO THE SUBSPECIES OF *LOBELIA LAXIFLORA*

1a. Lamina 1–5 cm wide, 2–8 times longer than wide, the base rounded, obtuse, or cuneate . . . . . *L. laxiflora* subsp. *laxiflora*

1b. Lamina 0.2–1.4 cm wide, 12–18 times longer than wide, the base attenuate . . . . . *L. laxiflora* subsp. *angustifolia*

ERRORS IN PRIORITY

While preparing the checklist of world Campanulaceae, I discovered three species that were known by illegitimate names, because an epithet with priority had been overlooked. Although Article 14.1 permits conservation of names threatened in this fashion, I do not consider such action appropriate in these cases, as the changes proposed here will likely prove "disadvantageous" to few if any workers. As was the case with *Campanula immodesta* Lammers and *Wahlenbergia brehmeri* Lammers (Lammers, 1998a), these three species belong

to large genera and are not particularly well known. Few botanists would recognize them off-hand or be able to distinguish them from congeners without recourse to keys and comparative material. As such, they scarcely constitute "useful exceptions," and I judge it best to allow the rules of priority to operate unhindered.

The *Flora of Turkey* includes a species of perennial *Campanula* known in the literature (e.g., Damboldt, 1978; Greuter et al., 1984; Heller & Heyn, 1993) as *C. latiloba* A. DC. From its description, *C. grandis* Fischer & C. A. Meyer clearly refers to the same species and has long been treated as its synonym (Boissier, 1875; Beddome, 1907; Bailey & Lawrence, 1953; Lewis & Lynch, 1989). The two names were both published during 1839. However, De Candolle's binomial was published in volume 7, part 2, of his father's *Prodromus*, which appeared in late December, while Fischer and Meyer's appeared in the fifth annual *Index Seminum* of the botanical garden at St. Petersburg, issued the previous January (Stafleu & Cowan, 1976). Thus, as pointed out by Crook (1951), *Campanula grandis* had more than 10 months' priority over *C. latiloba* and is the legitimate name of the species. A new combination is effected here so that a recently described subspecies has a name under the legitimate species name:

Campanula grandis subsp. **rizeensis** (A. Güner) Lammers, comb. nov. Basionym: *Campanula latiloba* subsp. *rizeensis* A. Güner, Candollea 39: 348. 1984. TYPE: Turkey. Rize: Çamlıhemşin çevresi, sarp kayalık, ca. 250 m, 21 May 1981, *A. Güner 3547* (holotype, HUB not seen; isotype, ANK not seen).

In the Cordillera Central of Colombia is a robust species of *Centropogon* that was called *C. willdenowianus* (C. Presl) F. E. Wimmer by Wimmer (1943) and McVaugh (1949). However, the basionym of that name was an avowed substitute for a legitimate name, and a later homonym besides. Therefore, it must be replaced.

This species was first described under the name *Lobelia ayavacensis* Schultes in the fifth volume of the *Systema Vegetabilium*, issued in December 1819. The description was based on a sheet in the Willdenow herbarium at B, which was given the serial number 4003. This sheet bears no information on locality or collector, only the binomial and the initial "W." for Willdenow. In the protologue, however, Schultes indicated it was collected in tropical America by Humboldt and Bonpland. This sheet is a mixed collection. In the center is a fertile stem apex belonging to the Colombian species. Flanking it are a detached leaf (left) and flower (right) belonging to a superficially similar but entirely different species, *Siphocampylus umbellatus* (Kunth) G. Don (based on *Lobelia umbellata* Kunth), endemic to the states of Minas Gerais and Rio de Janeiro in Brazil.

The source of this extraneous material is apparently the type of *L. umbellata* (*Humboldt & Bonpland s.n.*, P-Bonpl. [IDC-microfiche!]). That sheet is likewise a mixed collection, bearing not only a fertile stem apex of Brazilian *S. umbellatus*, but also a detached flower and leaf of the Colombian species. Thus it appears that portions of two discrete specimens were inadvertently interchanged. Perhaps this occurred when Humboldt took his collection to Berlin to sort and arrange it with Willdenow (cf. McVaugh, 1955). Whatever its origin, this mixing of material resulted in taxonomic confusion. Kunth (1820, 1823) treated *L. ayavacensis* as a synonym of *L. umbellata* (which had a month's priority), as did Don (1834), who transferred the species to *Siphocampylus* Pohl.

Presl (1836) was the first to become aware of the mix-up and attempt to remedy it. He recognized *L. umbellata* and immediately following it, a second species, *L. willdenowiana* C. Presl. This name was not accompanied by a description or diagnosis, merely the parenthetical notation "L. ayavacensis *Willd. herb. n.* 4003, *specim. medium.*"

In light of modern practice, Presl accomplished three things with this brief citation. First, as defined by Article 32.5 of the *Code*, he provided an indirect reference to a validly published diagnosis, that of *L. ayavacensis*. Second, he designated the portion of the original material of that name that best matched the diagnosis to be the lectotype. Third, he proposed the name *L. willdenowiana* as an avowed substitute (nomen novum) for *L. ayavacensis*. It was this last move that caused problems. Though it was common in the nineteenth century to simply abandon names based on mixed collections, the *Code* now requires (Art. 9.10) that such a name remain attached to that part of the type that corresponds most nearly with the original diagnosis. Because the portion explicitly cited by Presl better matches the diagnosis of *L. ayavacensis*, he should have retained that name. Furthermore, the new name he proposed violates Article 53.1, as it is a later homonym of *L. willdenowiana* Schultes, a synonym of *Lysipomia aretioides* Kunth (Wimmer, 1953). For these reasons, new combinations are necessary for both the species proper and for the heteronymic subspecies recognized by McVaugh (1949):

Centropogon ayavacensis (Willdenow ex Schultes) Lammers, comb. nov. Basionym: *Lobelia ayavacensis* Willdenow ex Schultes, in Roemer & Schultes, Syst. Veg. 5: 57. 1819. *Lobelia willdenowiana* C. Presl, Prodr. Monogr. Lobel. 39. 1836, nom. superfl.; non Schultes, in Roemer & Schultes, Syst. Veg. 5: 634. 1819. *Siphocampylus umbellatus* var. *willdenowianus* (C. Presl) A. DC., in DC., Prodr. 7: 406. 1839. *Centropogon willdenowianus* (C. Presl) F. E. Wimmer, Repert. Spec. Nov. Regni Veg. 22: 204. 1926. TYPE: "In America merid.," leg. Humboldt & Bonpland, *Herb. Willdenow 4003* (lectotype, selected by Presl [1836: 39], stem portion in middle, B-W [IDC-microfiche!]).

Siphocampylus stellatus Gleason, Bull. Torrey Bot. Club 52: 67. 1925. TYPE: Colombia. Tolima: between Volcancito and Roble, 27 Jan. 1853, *Holton s.n.* (holotype, NY).

Centropogon ayavacensis subsp. **cylindricus** (Gleason) Lammers, comb. nov. Basionym: *Siphocampylus cylindricus* Gleason, Bull. Torrey Bot. Club 52: 66. 1925. *Centropogon cylindricus* (Gleason) F. E. Wimmer, Pflanzenr. IV.276b: 257 (1943). *Centropogon willdenowianus* subsp. *cylindricus* (Gleason) McVaugh, Brittonia 6: 480. 1949. TYPE: Colombia. Tolima: Rosalito to Murillo, *Pennell 3142* (holotype, NY).

In southern and central Africa is a small short-lived species of *Lobelia* that was called *L. depressa* L. f. by Wimmer (1953). However, the type of that name (*Linné filius HU77*, S-LINN not seen) is not referable to the genus *Lobelia* but rather to *Monopsis* Salisbury. Thulin (1983, 1984) identified the specimen as *M. simplex* (L.) F. E. Wimmer, while Phillipson (1986) treated it as *M. debilis* (L. f.) C. Presl var. *depressa* (L. f.) Phillipson.

The earliest name actually referable to this *Lobelia* was *Mezleria depressa* A. DC. However, that name was illegitimate, as it was a later homonym of *M. depressa* (L. f.) C. Presl. Though De Candolle had cited Presl as the authority for the binomial, he specifically excluded its basionym, *L. depressa*, making it a new name based on its own type (Art. 48.1). The earliest legitimate name referable to this *Lobelia* is *Mezleria dregeana* Sonder, which had been proposed as an explicit replacement for illegitimate *M. depressa*. However, use of its epithet in *Lobelia* is precluded by the existence of *L. dregeana* (C. Presl) A. DC. Finally, *L. sonderi* Zahlbruckner was published so that *M. dregeana* would have a name in the genus *Lobelia*.

Thulin (1983, 1984) enlarged the circumscription of this species considerably. Among the many new synonyms were several that had priority over *L. sonderi*, the earliest among them *L. angolensis* and *L. lythroides*. Thulin took up the former for the enlarged species.

In doing so, he (like Zahlbruckner before him) unfortunately overlooked an earlier legitimate epithet. When Kuntze took up the generic name *Dortmanna* Hill for the species then assigned to *Lobelia*, he published *D. sonderiana* Kuntze as an avowed substitute for *M. dregeana*. This replacement name was necessitated by his simultaneous validation of *D. dregeana* (C. Presl) Kuntze for *L. dregeana*. Thus, *sonderiana* is the earliest epithet referable to this species, and the new combination required by the *Code* is effected here:

Lobelia sonderiana (Kuntze) Lammers, comb. nov. Basionym: *Dortmanna sonderiana* Kuntze, Revis. Gen. Pl. 2: 972. 1891. Replaced name: *Mezleria dregeana* Sonder, in Harvey & Sonder, Fl. Cap. 3: 533. 1865; non *Dortmanna dregeana* (C. Presl) Kuntze, Revis. Gen. Pl. 2: 972. 1891; nec *Lobelia dregeana* (C. Presl) A. DC., in DC., Prodr. 7: 731. 1839. Replaced name: *Mezleria depressa* A. DC., in DC., Prodr. 7: 350. 1839; non *Mezleria depressa* (L. f.) C. Presl, Prodr. Monogr. Lobel. 7. 1836; nec *Lobelia depressa* L. f., Suppl. Pl. 395. 1782. *Lobelia sonderi* Zahlbruckner, Ann. K. K. Naturhist. Hofmus. 18: 404. 1903, nom. superfl. *Lobelia depressa* var. *dregeana* (Sonder) F. E. Wimmer, Notizbl. Bot. Gart. Berlin-Dahlem 15: 633. 1941. TYPE: South Africa. Cape Province: Witbergen, *Drège s.n.* (holotype, G-DC [IDC-microfiche!]).

Lobelia lythroides Diels, Bot. Jahrb. Syst. 26: 113. 1899. TYPE: South Africa. Transvaal: Pretoria, *Wilms 883* (syntype, B not seen) and *Wilms 886* (syntype, B not seen).

Lobelia angolensis Engler & Diels, Bot. Jahrb. Syst. 26: 114. 1899. TYPE: Angola. Huila, *Welwitsch 1146* (syntype, B not seen) and *Antunes 94* (syntype, B not seen).

[Additional heterotypic synonyms cited by Thulin (1983, 1984).]

As an aside, it should be noted that *L. depressa* is the type of *Mezleria* C. Presl (Pfeiffer, 1874: 298). This generic name typically has been used for a subgenus of *Lobelia* (e.g., Wimmer, 1953; Murata, 1995), but can no longer serve that purpose because, as noted above, the type of *L. depressa* is referable to the genus *Monopsis*. As a result, *Mezleria* is a synonym of *Monopsis* and cannot be used

for any taxon in *Lobelia*. When circumscribed following Wimmer (1953), the subgenus has no name available; under the broader circumscription of Murata (1995), it may be called *Lobelia* subg. *Isolobus* (A. DC.) Y. S. Lian.

NEW ASSIGNMENTS

Continued work on the checklist disclosed several more species (or subspecies) that do not have a legitimate name in the genus (or species) to which they should be assigned.

Recent studies in my lab (cf. Morris & Lammers, 1997a, 1997b) have supported Grey-Wilson's (1990) suggestion that *Leptocodon* (Hooker f.) Lemaire be subsumed into *Codonopsis*. Unpublished cladistic analyses of morphological and palynological data by Morris indicate that the two species that comprise *Leptocodon* are embedded well within the structure of *Codonopsis*. The type of *Leptocodon* already has a name available in *Codonopsis*. Here, a new combination is proposed for the other species, to complete the merger of the two genera:

Codonopsis hirsuta (D. Y. Hong) K. E. Morris & Lammers, comb. nov. Basionym: *Leptocodon hirsutus* D. Y. Hong, Acta Phytotax. Sin. 18: 246. 1980. TYPE: China. Xizang: Zayu, Shang Zayu Zhong Xiang A Zha, mixed forest on slope, 2500 m, *Qinghai-Xizang Exped. Team 73-1014* (holotype, PE not seen).

These same studies also support the recognition of *Campanumoea* Blume sect. *Cyclocodon* (Griffith) C. B. Clarke as a distinct genus, a conclusion reached independently by Hong (1998). In order to preserve the subspecific classification proposed by Moeliono (1960), a new combination under *Cyclocodon* is required:

Cyclocodon lancifolius subsp. **celebicus** (Blume) K. E. Morris & Lammers, comb. nov. Basionym: *Campanumoea celebica* Blume, Bijdr. 727. 1825. *Campanula celebica* (Blume) D. Dietrich, Syn. Pl. 1: 758. 1839. *Codonopsis celebica* (Blume) Miquel, Fl. Ned. Ind. 2: 566. 1857. *Codonopsis lancifolia* subsp. *celebica* (Blume) Moeliono, in Steenis, Fl. Males. (ser. 1) 6(1): 121. 1960. *Cyclocodon celebicus* (Blume) D. Y. Hong, Acta Phytotax. Sin. 36: 109. 1998. TYPE: Indonesia. Sulawesi: sine loc., *Reinwardt s.n.* (holotype, L not seen).

Codonopsis leucocarpa Miquel, Fl. Ned. Ind. 2: 565. 1857. TYPE: Indonesia. Sumatra: in de kloof van den Singalang, *Teijsmann s.n.* (holotype, U not seen).

As noted previously (Lammers, 1998a), my treatment of the Hawaiian Lobelioideae (Lammers, 1990) for the *Manual of the Flowering Plants of Hawai'i* occasionally synonymized taxa that subsequent studies suggest should be recognized at some level. Case in point: *Cyanea baldwinii* C. N. Forbes & G. C. Munro from Lāna'i. Impressed by the overall similarity of its leaves and flowers to those of *C. lobata* H. Mann from northern West Maui, I treated the former as a mere synonym of the latter. More detailed study, however, revealed characters by which the two could be distinguished, and it is consistent with my practice elsewhere to treat them as allopatric subspecies:

Cyanea lobata subsp. **baldwinii** (C. N. Forbes & G. C. Munro) Lammers, comb. et stat. nov. Basionym: *Cyanea baldwinii* C. N. Forbes & G. C. Munro, Occas. Pap. Bernice Pauahi Bishop Mus. 7: 43. 1920. *Delissea baldwinii* (C. N. Forbes & G. C. Munro) H. St. John, Phytologia 63: 81. 1987. TYPE: Hawaiian Islands. Lāna'i: Lāna'ihale, but one tree seen, near top of ridge close to trail, just before ascending the strip part of trail, growing amongst thick scrub, 3000 ft., Sep. 1919, *Munro 674* (holotype, BISH; isotypes, BISH[2], NSW, NY, UC).

KEY TO THE SUBSPECIES OF *CYANEA LOBATA*

1a. Petiole 1/6–1/4 as long as the lamina; calyx lobes 10–15 mm long, 2.4–4 mm wide, narrowly oblong or narrowly triangular; dorsal anthers 12–13.5 mm long . . . . . *C. lobata* subsp. *baldwinii*

1b. Petiole 1/3–1/2 as long as the lamina; calyx lobes 16–22 mm long, 3–7.5 mm wide, elliptic or oblong; dorsal anthers 9–11.5 mm long . . . . . *C. lobata* subsp. *lobata*

Previously (Lammers, 1988, 1990), I treated all populations of *Delissea* with a palm-like habit as a single species, *D. undulata* Gaudichaud, divided into three allopatric subspecies: subsp. *niihauensis* (H. St. John) Lammers from the westernmost island, Ni'ihau; subsp. *kauaiensis* Lammers from nearby Kaua'i; and subsp. *undulata* from the easternmost islands of West Maui and Hawaii. This classification was not consistent with my treatment of similar complexes among the Hawaiian Lobelioideae, as the morphological gap separating the two western subspecies from the eastern subspecies was quite wide when compared to that which usually separates conspecific subspecies. Furthermore, in no other instance have I recognized conspecific subspecies that are separated geographically by several islands. For these reasons, I now recognize two spe-

cies of palmiform *Delissea: D. undulata* on Hawai'i, and *D. niihauensis* H. St. John with allopatric subspecies on Ni'ihau and Kaua'i. A new combination is needed for the last:

Delissea niihauensis subsp. **kauaiensis** (Lammers) Lammers, comb. nov. Basionym: *Delissea undulata* subsp. *kauaiensis* Lammers, Syst. Bot. 13: 505. 1988. TYPE: Hawaiian Islands. Kaua'i: on the Hanapēpē and Wahiawā watershed, 24 June 1895, *Heller 2430* (holotype, MSC; isotypes, A, AC, BM, E, F[2], G, GH, K, MIN, NY, P, UC, US).

KEY TO PALMIFORM *DELISSEA*

1a. Lamina elliptic or lanceolate, 3–4 times longer than wide, the base cuneate, the margin undulate and denticulate; peduncles 15–50 mm long (Hawai'i) . . . . . *D. undulata*

1b. Lamina ovate, 1.3–2 times longer than wide, the base cordate or truncate, rarely cuneate, the margin flat and crenate or serrate; peduncles 5–20 mm long . . . . . *D. niihauensis*

2a. Lamina 5–11 cm long, 3.5–7 cm wide, base cordate, apex acute, margin callose-crenate (Ni'ihau) . . . *D. niihauensis* subsp. *niihauensis*

2b. Lamina (7–)14–18 cm long, (3–)7–10 cm wide, base truncate or rarely cuneate, apex acuminate, margin coarsely callose-serrate (Kaua'i) . . . . . *D. niihauensis* subsp. *kauaiensis*

Acknowledgments. I thank my students, Michael James Eakes and Kari Ellen Morris, for permission to publish their nomenclatural innovations here; Field Museum Scientific Illustrator Zorica Dabich for skillfully executing Figure 1; Fred Barrie (MO) for reviewing the manuscript prior to submission; and the administrators and staffs of the many herbaria from which specimens were seen: A, AC, ARIZ, B, BISH, BM, CAS, ENCB, E, G, GH, GOET, K, MEXU, MICH, MIN, MO, MSC, NSW, NY, P, PH, TEX, UC, US, and W.

Literature Cited

Bailey, L. H. & G. H. M. Lawrence. 1953. The Garden of Bellflowers in North America. MacMillan, New York.

Beddome, R. H. 1907. An annotated list of the species of *Campanula*. J. Roy. Hort. Soc. 32: 196–221.

Boissier, E. 1875. Flora Orientalis, Vol. 3. H. Georg, Geneva.

Crook, H. C. 1951. Campanulas: Their Cultivation and Classification. Country Life, London.

Damboldt, J. 1978. Campanulaceae. Pp. 2–89 *in* P. Davis (editor), Flora of Turkey and the East Aegean Islands, Vol. 6. Univ. Press, Edinburgh.

Don, G. 1834. A General History of the Dichlamydeous Plants, Vol. 3. J. G. & F. Rivington, London.

Eakes, M. J. & T. G. Lammers. 1996. Phenetic analysis of the *Lobelia laxiflora* complex (Campanulaceae: Lobelioideae) reveals a previously undescribed species in Mexico Amer. J. Bot. 83 (6, Suppl.): 154. [Abstract.]

Greuter, W., F. R. Barrie, H. M. Burdet, W. G. Chaloner, V. Demoulin, D. L. Hawksworth, P. M. Jørgensen, D. H. Nicolson, P. C. Silva, P. Trehane & J. McNeill. 1994. International Code of Botanical Nomenclature (Tokyo Code). Regnum Veg. 131.

———, H. M. Burdet & G. Long. 1984. Med-Checklist, Vol. 1. Conservatoire et Jardin Botaniques, Geneva.

Grey-Wilson, C. 1990. A survey of *Codonopsis* in cultivation. Plantsman 12: 65–99.

Hamlin, J. 1995. Sophomore's discovery. In the Field 66(5): 3.

Heller, D. & C. C. Heyn. 1993. Conspectus Florae Orientalis, Vol. 8. Israel Academy of Sciences and Humanities, Jerusalem.

Hong, D. Y. 1998. The restoration of the genus *Cyclocodon* (Campanulaceae) and its evidence from pollen and seed-coat. Acta Phytotax. Sin. 36: 106–110.

Kunth, C. S. 1820. Index plantarum nostrarum, a Lehmanno, Römerio et Schultesio sub aliis nominibus vulgatarum. Pp. 451–456 *in* A. Humboldt, A. Bonpland & C. S. Kunth, Nova Genera et Species Plantarum (quarto ed.). Librariae Graeco-Latini-Germanicae, Paris.

———. 1823. Synopsis Plantarum, Vol. 2. F. G. Levrault, Paris.

Lammers, T. G. 1988. New taxa, new names, and new combinations in the Hawaiian Lobelioideae (Campanulaceae). Syst. Bot. 13: 496–508.

———. 1990. Campanulaceae. Pp. 420–489 *in* W. L. Wagner, D. R. Herbst & S. H. Sohmer, Manual of the Flowering Plants of Hawai'i. Univ. Hawaii Press and Bishop Museum Press, Honolulu.

———. 1995. Transfer of the southern African species of *Lightfootia*, nom. illeg., to *Wahlenbergia* (Campanulaceae, Campanuloideae). Taxon 44: 333–339.

———. 1998a. New names and new combinations in Campanulaceae. Novon 8: 31–35.

———. 1998b. Review of the neotropical endemics *Burmeistera*, *Centropogon*, and *Siphocampylus* (Campanulaceae: Lobelioideae), with description of 18 new species and a new section. Brittonia 50: 233–262.

———. 1999. Nomenclatural consequences of the synonymization of *Hypsela reniformis* (Campanulaceae: Lobelioideae). Novon 9: 73–76.

Lewis, P. & M. Lynch. 1989. Campanulas. Christopher Helm, London.

McVaugh, R. 1943. Campanulaceae (Lobelioideae). N. Amer. Fl. 32A: 1–134.

———. 1949. Studies in South American Lobelioideae (Campanulaceae) with special reference to Colombian species. Brittonia 6: 450–493.

———. 1955. The American collections of Humboldt and Bonpland, as described in the *Systema Vegetabilium* of Roemer and Schultes. Taxon 4: 78–86.

Moeliono, B. 1960. *Codonopsis*. Pp. 118–121 *in* C. G. G. J. van Steenis (editor), Flora Malesiana (ser. 1), Vol. 6(1). Noordhoff-Kolff, Djakarta.

Morris, K. E. & T. G. Lammers. 1997a. Circumscription of *Codonopsis* and the allied genera *Campanumoea* and *Leptocodon* (Campanulaceae: Campanuloideae). I. Palynological data. Bot. Bull. Acad. Sin. 38: 277–284.

——— & ———. 1997b. Circumscription of *Codonopsis* (Campanulaceae: Campanuloideae) and allied genera. Amer. J. Bot. 84 (6, Suppl.): 218. [Abstract.]

Murata, J. 1995. A revision of infrageneric classification of *Lobelia* (Campanulaceae-Lobelioideae) with special

reference to seed coat morphology. J. Fac. Sci. Univ. Tokyo (sect. 3) 15: 349–371.

Pfeiffer, L. 1874. Nomenclator Botanicus, Vol. 2. T. Fischer, Kassel.

Phillipson, P. B. 1986. Taxonomy of *Monopsis* (Lobeliaceae): *M. simplex*, *M. debilis* and a new species. Bot. J. Linn. Soc. 93: 329–341.

Presl, C. 1836. Prodromus Monographiae Lobeliacearum. Theophilus Haase, Prague.

Stafleu, F. A. & R. S. Cowan. 1976. Taxonomic Literature, 2nd ed., Vol. 1. Bohn, Scheltema & Holkema, Utrecht.

Thulin, M. 1983. Lobeliaceae. Pp. 116–157 *in* E. Launert (editor), Flora Zambesiaca, Vol. 7(1). Flora Zambesiaca Managing Committee, London.

———. 1984. Lobeliaceae. *In* R. M. Polhill (editor), Flora of Tropical East Africa. A. A. Balkema, Rotterdam.

Wimmer, F. E. 1943. Campanulaceae-Lobelioideae, I. Teil. Pp. i–viii, 1–260 *in* R. Mansfeld (ed.), Das Pflanzenreich, IV.276b. Akademie-Verlag, Berlin.

———. 1953. Campanulaceae-Lobelioideae, II. Teil. Pp. i–viii, 261–814 *in* R. Mansfeld (editor), Das Pflanzenreich, IV.276b. Akademie-Verlag, Berlin.